

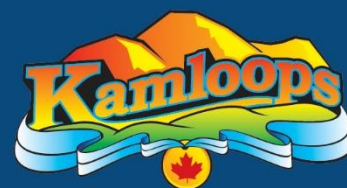


Photo Credit: Sam Numsen

**City of Kamloops**

# **Climate Response Paper:**

**Strategies to Reduce Community  
Greenhouse Gas Emissions**



Canada's Tournament Capital

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# 1. Context

## Introduction

The City of Kamloops is currently developing a Community Climate Action Plan (CCAP) to reduce greenhouse gas (GHG) emissions through to 2039, the year the City's population is expected to reach 120,000 based on the growth strategy in KAMPLAN: City of Kamloops Official Community Plan. In addition to short-term, pragmatic actions, the CCAP will provide a number of ambitious, longer-term actions—characterized as “Big Moves”—that support the Intergovernmental Panel on Climate Change's (IPCC) 2018 report on limiting global warming to 1.5°C.

The IPCC 1.5°C report emphasizes that society needs to transition off of fossil fuels and achieve net zero-carbon emissions by 2050 or sooner and net-negative emissions in the second half of the century to have a reasonable chance at limiting global warming to 1.5°C. The decline must begin immediately, and GHG emissions must drop by 40% to 60% by 2030.

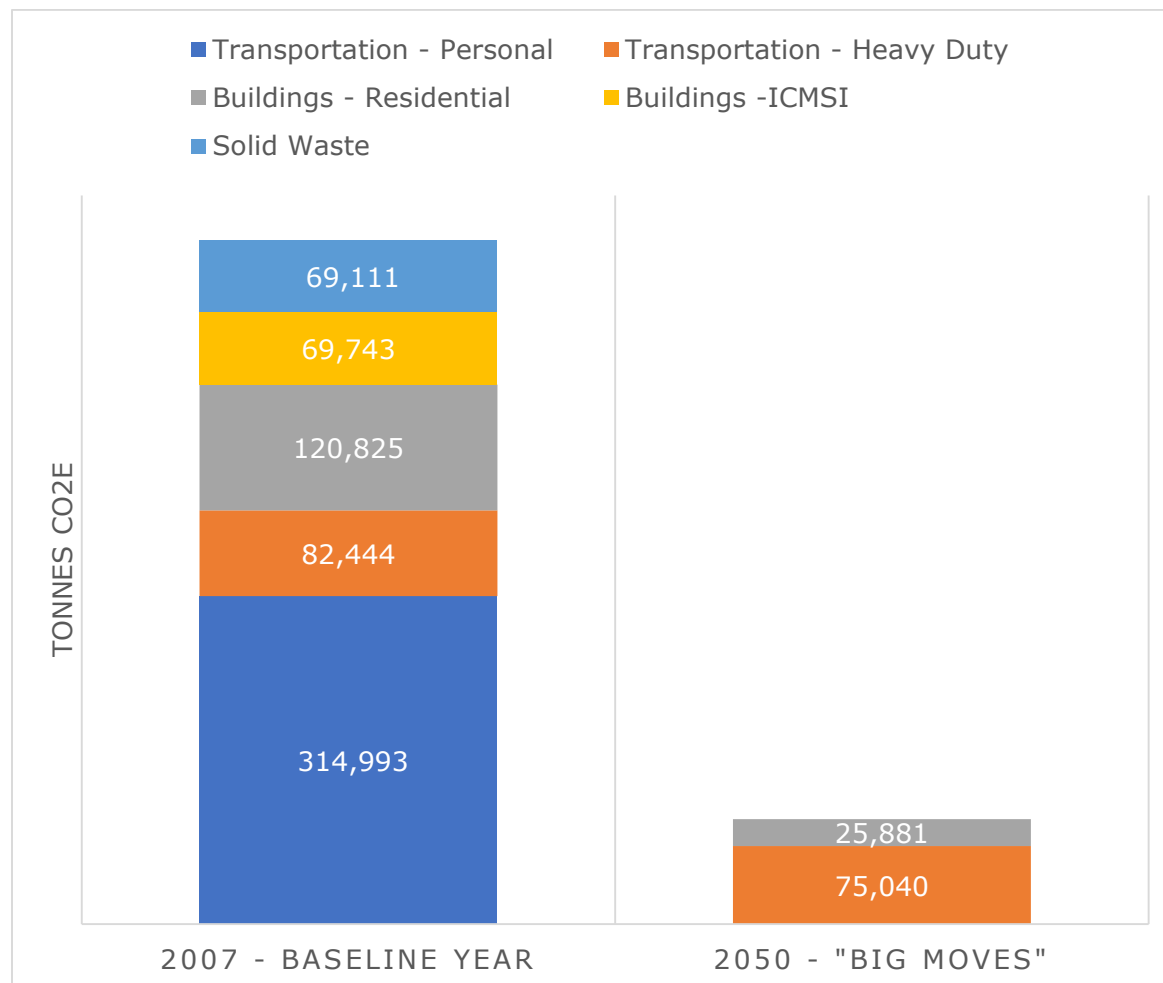
## Getting to Zero-carbon

To date, GHG emissions reductions in Kamloops, as in most communities, have been relatively modest and do not approach the rate of change reflected in the IPCC's direction. The challenge of achieving net zero-carbon emissions by 2050 is compounded by Kamloops' anticipated growth rate during this period.

The City's community GHG inventory includes three main sources of emissions—transportation (fuels consumed through personal and commercial vehicles), buildings (primarily energy from heating), and solid waste (decomposition of organic matter). Each of these sources must set a course to achieve zero-carbon emissions by 2050 to be congruent with the IPCC direction (i.e. a complete transition away from reliance on fossil fuels). This is an unprecedented challenge, and many of the policy tools that are needed to achieve this goal are not currently within the City's reach. Nevertheless, the City can take action in many areas and, with cooperation from other levels of government, industry, and citizens, provide leadership to set a direction for achieving a zero-carbon goal by 2050.

Figure 1 compares the City's 2007 baseline emissions by source to the level of emissions reductions projected to be achieved by the Big Moves actions by 2050. Figure 1 also shows the remaining emissions in the heavy-duty transportation and existing residential building sectors would also need to be eliminated by 2050 to achieve a truly net zero community. However, at this time, the necessary technology and policy tools are unknown, so these sectors are currently projected to have remaining emissions.

Figure 1 - 2050 Big Moves emissions reductions compared to 2007 baseline by source



## 2. Methodology

Modeling was completed to identify emissions reductions to support policy options for the actions—Big Moves—presented in this paper. In addition, a best practices review of community energy plans from other municipalities helped inform the proposed actions in this paper. Best practices were selected based on:

- Location in BC
- Population between 70,000 and 150,000 (i.e. comparable to Kamloops)
- Recognition by one or more third-party organizations, including:
  - C40 Cities ([Cities 100](#) and [Cities Leading the Way](#))
  - [CDP Cities A-List](#)
  - [World Wildlife Fund, One Planet City Challenge](#)

“IPCC1.5-compliant” targets are defined as:

- net zero emissions by 2050
- 40–60% emissions reduction by 2030 (or sooner)

Based on previous climate action work completed by the City and the best practices review, several categories and actions were selected. In order to assess the feasibility and potential impact of the actions, they were rated against the following criteria:

- GHG reduction - the relative emissions impact of the action, based on modeling.
- City control - the amount of control or authority the City has to implement the action.
- Simplicity - how easy the action would be to implement.
- Co-benefits - benefits the action could achieve, other than emissions reductions (e.g. improve air quality).

Based on this work, the following eight Big Moves were identified as having the potential to move Kamloops towards a zero-carbon future by 2050:

- Low-Carbon Development
- Car-Light Community
- Zero-Emissions Transportation
- Zero-Carbon Homes and Buildings
- Zero-Waste/Circular Economy
- Renewable Energy
- Zero-Carbon Civic Operations
- Healthy Urban Ecosystem

Each of these are presented graphically in the following section.

### 3. Sectors and Policy Options

The eight Big Moves flysheets are shown on the following pages.

DRAFT





## Low-Carbon Development

By **2050, 90% of residents** can access their daily needs and efficient transit within an easy walk/roll.

### Policy Options

#### 10-Minute City (option 1A)

- Plan most new development in existing neighbourhoods
- Concentrate, where possible, housing in areas well-served by transit, cycling, and walking networks
- Make it easier to walk and bike for daily needs

#### Green New Neighbourhoods (option 1B)

- Higher sustainable development standards for new subdivisions (e.g. higher Step Code level, compact form, clean energy etc.)
- Protect and restore healthy ecosystems

#### Urban Containment (option 1C)

- Create a boundary to prevent sprawl and contain most new development

### Why is it important?

- More land can be protected for nature and recreation.
- Compact neighbourhoods are easier to serve with efficient transit.
- Less infrastructure (roads, pipes, etc.) is needed, saving taxpayers' money.
- Daily needs close by means more independence for those who can't drive.
- Cycling and walking are good for health and reducing pollution.

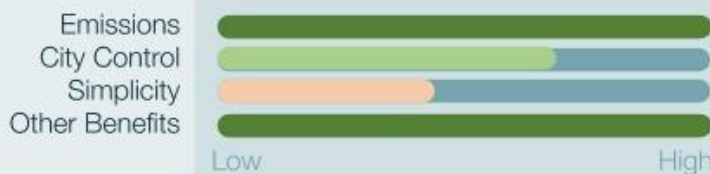


### Jump-Start Actions

#### What can be done now?

- Review current neighbourhood nodes and corridor policies, and bolster for complete community land use
- Review policies for urban containment and green space preservation (e.g. OCP, community plans)

### How does it rank?



### What other benefits?

- Good health and well-being
- Decent work and economic growth
- Clean water and sanitation
- Sustainable cities and communities
- Affordable and clean energy
- Life on land

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### Who else is doing it?

- Blatchford, Edmonton, AB - a new zero carbon community powered by renewable energy, linked with transit
- UniverCity, Burnaby, BC - a compact community with high green standards, water managed to protect salmon streams
- Saanich, BC - an urban containment boundary protects farmland and natural areas and concentrates development
- Vancouver, Richmond, BC - new climate frameworks include walkable city goals



## Car-Light Community

By **2050, 50% of trips** in Kamloops to be by active transportation and transit.

### Why is it important?

- Reducing car and truck traffic makes our city safer and healthier.
- Lively, walkable neighbourhood centres are good for local businesses.
- Separated bike lanes encourage people to cycle.
- E-bikes make it easier to climb hills and ride longer distances.
- Reducing car/truck carbon pollution is one of the biggest climate actions the city can take.



### Jump-Start Actions

#### What can be done now?

- Design and budget a complete cycle network
- Explore and develop superblock pilot projects
- Commission E-bike/ cargo-bike strategy
- Commission an urban freight strategy for efficient and low-carbon goods movement
- Review low-emission zone policies underway in other BC cities

### Policy Options

#### Low-Emissions Superblocks (option 2A)

- Downtown superblock pilot to convert streets to prioritize walking/cycling, greenspace, and public gathering

#### Low-Emissions Zones (option 2B)

- Prioritize low-emissions vehicles in certain areas of city

#### Active Mobility (option 2C)

- Create safer cycling and walking network across the city for all ages and abilities
- Improve streets to make it easy, safe, and accessible to walk, cycle, and "roll"

#### E-Bikes and Cargo Bikes (option 2D)

- Provide incentives for E-bikes and cargo-bikes, secure parking with plug-ins; micro-hubs for freight delivery

### How does it rank?



### What other benefits?

- Good health and well-being
- Decent work and economic growth
- Industry, innovation, and infrastructure
- Reduced inequality
- Sustainable cities and communities

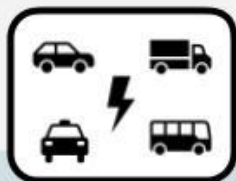
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### Who else is doing it?

- [Barcelona](#) and [Vitoria-Gasteiz](#) , Spain - world leading neighbourhood conversions to low-emission [superblocks](#)<sup>1</sup>, converting excess space to parks
- Uppsala, Sweden - invested in cycling networks such that cycling is now the leading mode of transport in the urban centre
- Paris, France - heavy subsidies for E-bikes and E-bike sharing program

<sup>1</sup> Superblocks are aggregates of city blocks with traffic restricted to the roads around the outside. The Guardian, 2016.





## Zero-Emissions Transportation

By **2050, 85% of kilometres driven** by Kamloops registered passenger vehicle owners to be by zero-emissions vehicles.

### Why is it important?

- Switching to EVs reduces one of the city's biggest sources of GHGs.
- All-battery EVs emit no pollution from the tailpipe, meaning healthier air to breathe.
- BC has a clean electricity grid, so going electric is a big win for the climate.
- EVs have lower maintenance costs.

### Policy Options

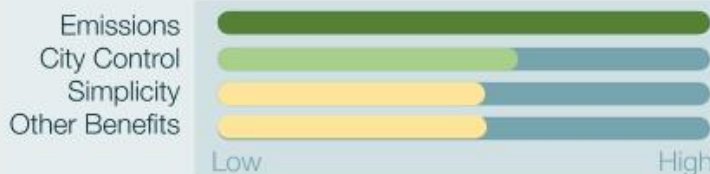
#### Zero-Emissions Vehicle Strategy for Light-Duty Vehicles (option 3A)

- Advocate for stronger zero-emission vehicle (ZEV) mandates (province/fed) - also for Med/Heavy Duty
- Develop a robust public charging network and requirements for EV charging in new developments
- Develop zero emission zones and ZEV priority parking
- Encourage EV car-share, taxi, and ride hailing

#### Enhanced ZEV Strategy for Medium- and Heavy-Duty Vehicles (option 3B)

- Support ZEV transit and school buses
- Explore fees for transit, loading, and parking, discounted for ZEVs
- Investigate and pilot [vehicle to grid](#) charging

### How does it rank?



### Jump-Start Actions

#### What can be done now?

- Adopt an EV-ready bylaw for new development
- Begin planning and budgeting for publicly accessible EV charging
- Initiate a green finance and policy review for retrofitting buildings for EV charging and low-carbon heating
- Commission an urban freight strategy for efficient and low-carbon goods movement

### What other benefits?

- Good health and well-being
- Affordable and clean energy
- Decent work and economic growth
- Industry, innovation, and infrastructure
- Sustainable cities and communities

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### Who else is doing it?

- **New Westminster, BC** - target 50% of all kilometres driven by vehicles registered in city to be ZEVs by 2030
- **Langley, BC** - heavy-duty vehicle policy is in process
- **Scotland** - developed a utility-led roadmap to zero-emission cities that quantified needed EV charging stations and heat pumps
- **New York** and **California**, USA - ZEV for medium- and heavy-duty vehicles projects in place or under consideration



## Zero-Carbon Homes and Buildings

By **2030, all new and replacement** heating and hot water systems to be zero emissions.

### Why is it important?

- After transportation, buildings are the second highest source of GHG emissions in the city.
- Switching to electric heating and cooking improves indoor air quality in buildings.
- Heat pumps are super efficient, work in cold climates, and can provide cooling in summer.
- BC has a clean electricity grid, so going electric is a big win for the climate.
- Kamloops is also well suited to solar energy.



### Jump-Start Actions

#### What can be done now?

- Implement low-carbon pathway along with Energy Step Code
- Develop residential heat pump incentive program
- Support and contribute to a regional or provincial retrofit program
- Review opportunities for low carbon retrofit tax incentives

### Policy Options

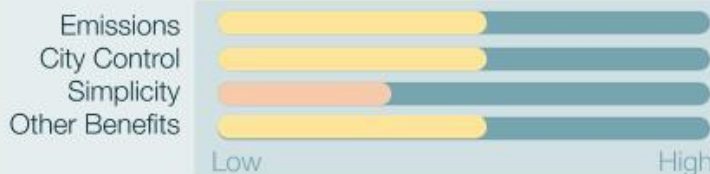
#### New Buildings (option 4A)

- Set targets for zero-carbon new buildings, encourage low-carbon new buildings with existing tools (e.g. Step Code)
- Advocate to the Province for stronger zero-carbon building regulations
- Incentives for energy efficiency and low carbon buildings (e.g. top-up to provincial/BC Hydro incentives)
- Explore incentives for energy efficient building materials and embodied carbon requirements

#### Existing Buildings (option 4B)

- Retrofit program for existing buildings focusing on health, climate resilience and GHG reduction

### How does it rank?



### What other benefits?

- Good health and well-being
- Affordable and clean energy
- Decent work and economic growth
- Sustainable cities and communities

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### Who else is doing it?

- [Boulder, USA](#) - Successful building electrification and heat pump campaign
- Burnaby, Port Moody, New Westminster, Surrey, Richmond, West Vancouver, BC - relaxation on Energy Step Code to incentive low-carbon energy systems
- [Regional District of Central Kootenay, BC](#) - program that offers on-bill financing for energy retrofits





## Zero-Waste/Circular Economy

Kamloops to be a **zero-waste community by 2040**.

### Why is it important?

- Capturing emissions from green and wood waste reduces methane emissions, a potent GHG.
- Repurposing materials and upcycling can keep more value in the local economy.
- A zero-waste system supports personal action to reduce consumption based emissions.

### Policy Options

#### Zero Waste Research and Innovation Centre (option 5A)

- Create a zero-waste research and innovation centre
- Support businesses for materials reuse, products as a service, upcycling, and more.

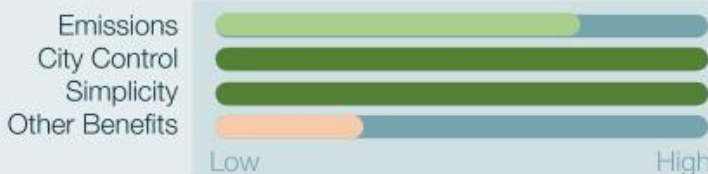
#### Local Organics Collection and Processing (option 5B)

- Capture all organic waste for beneficial end use
- Investigate producing biofuel from local organics for city uses (e.g. fuel for fleet vehicles or heating civic facilities)

#### Waste Diversion (option 5C)

- Requirements for waste diversion and materials reuse from construction and demolition sites
- Integrate waste systems with local energy production

### How does it rank?



### Jump-Start Actions

#### What can be done now?

- Undertake feasibility study for biogas capture from organics collection
- Policy/bylaw review to require or encourage building deconstruction and materials reuse

### What other benefits?

- Affordable and clean energy
- Decent work and economic growth
- Industry, innovation, and infrastructure
- Sustainable cities and communities
- Responsible consumption and production

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### Who else is doing it?

- [City of Surrey, BC](#) - Successful biogas facility
- [Uppsala, Sweden](#) - program that focuses on circular economy and integrated energy systems
- [Vancouver, BC](#) - private sector deconstruction and building materials reuse



## Renewable Energy

### Why is it important?

- Producing energy locally makes a household or neighbourhood less vulnerable to grid disruptions.
- With higher demand for electricity (e.g. from EVs and heat pumps), the grid needs to be more efficient and flexible.
- Everyone is going to need more green energy expertise and products—Kamloops can lead.
- Green jobs of the future require partnerships and innovation.



### Jump-Start Actions

#### What can be done now?

- **Explore** renewable energy opportunities with key local partners.
- **Investigate** opportunity for a renewable energy utility, linked with the City's existing sewer and water utility, along with governance and financial models

### Policy Options

#### Neighbourhood Scale Energy (option 6A)

- Explore community and neighbourhood scale renewable energy systems and storage for long-term energy security and flexibility
- Support research and development with academia, energy companies, business, institutions, and community

#### Green Industrial Park 2.0 (option 6B)

- Position Kamloops as a research, technology, and manufacturing hub for BC's low-carbon transition
- Explore flexible grid options for resilient and efficient systems that can cost-effectively handle increased loads from electric vehicles and buildings

### How does it rank?



### What other benefits?

- Quality Education
- Affordable and clean energy
- Decent work and economic growth
- Industry, innovation, and infrastructure
- Sustainable cities and communities
- Partnerships for the goals

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### Who else is doing it?

- New Westminster and City of Nelson, BC - community solar gardens
- [Barcelona, Spain](#) - private sector providing 100% renewable home energy systems
- [Uppsala, Sweden](#) - energy program integrates multiple energy sources with roadmap to net negative GHGs by 2050





## Zero-Carbon Civic Operations

The City of Kamloops to strive to reduce carbon emissions from municipal operations by **40% by 2030** and **100% by 2050**

### Why is it important?

- Demonstrating the City's commitment through action builds community support and buy-in.
- Staff can become more familiar with new practices (e.g. higher building standards) expected of builders.
- Stimulates the local green building and energy economy.

### Policy Options

#### Zero Carbon Civic Operations (option 7A)

- Corporate energy review, set targets ahead of community
- Strategically phase out fossil fuels in buildings and fleets
- Support staff climate action (e.g. green commuting)

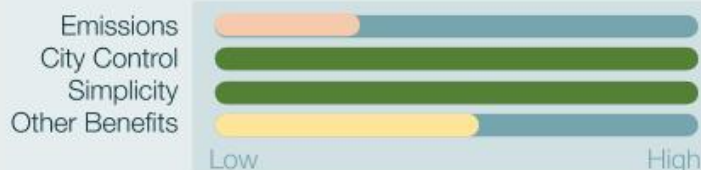
#### Finance and Implementation (option 7B)

- Incorporate "climate lens" in all City department work plans, in capital and operating budgets
- Establish internal carbon price
- Tracking and reporting progress
- Staff resources for coordination and new programs
- Measure, monitor, and publicly report progress

#### Communication and Engagement (option 7C)

- Communications and marketing plan
- Creative community engagement

### How does it rank?



### Jump-Start Actions

#### What can be done now?

- **Initiate** a corporate energy review
- **Adopt** an internal carbon price for decision making
- **Commit** all new city buildings to be zero carbon
- **Commit** to transitioning buildings and fleets to electric/zero carbon
- **Incentives** for staff (e.g. E-bikes, transit passes)

### What other benefits?

- Affordable and clean energy
- Decent work and economic growth
- Industry, innovation, and Infrastructure
- Sustainable cities and communities
- Partnerships for the goals

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### Who else is doing it?

- [City of New Westminster, BC](#) - committed to a "climate lens" across all city department work plans in capital and operating budgets
- [City of Los Angeles, USA](#) - created a Climate Emergency Mobilization Department
- Metro Vancouver, Vancouver and New West, BC - adopted an internal carbon price of \$150/t
- All of Vancouver's new buildings build to net zero emissions





## Healthy Urban Ecosystem

Increase Kamloops' **urban forest canopy cover to 20% by 2030 and 30% by 2050** to increase our forests' carbon storage capacity and support biodiversity.

### Why is it important?

- Healthy ecosystems provide us with clean air to breathe and filter the water we drink.
- Trees help keep the city cool and can reduce energy use in buildings.
- Rain gardens can filter out road pollution before it gets into fish streams.
- Being surrounded by nature is good for our health and well-being.
- Healthy grasslands and forests can store carbon.
- Plants and animals depend on healthy ecosystems.



### Jump-Start Actions

#### What can be done now?

- Initiate an urban forest/grassland and biodiversity strategy
- Develop green infrastructure street standards and pilots
- Review and update tree bylaw and policies

### Policy Options

#### Urban Forests for Climate Cooling (option 8A)

- Monitor tree protection regulations on private and public lands
- Expand urban tree canopy targets to include private land
- Develop native plant standards for public and private land
- Ensure access to public green space with trees and shade

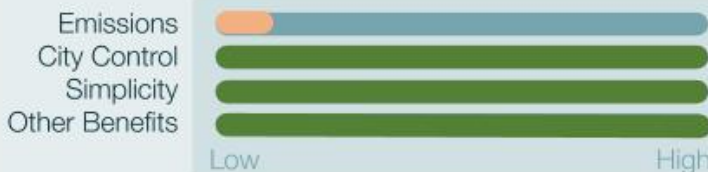
#### Protect and Heal Nature (option 8B)

- Develop local carbon offsetting program linked with biodiversity and conservation
- City and regional biodiversity corridors and ecosystem strategy

#### Green Infrastructure (option 8C)

- Integrate green technologies and natural vegetation (e.g. rain gardens) with infrastructure upgrades on public lands

### How does it rank?



### What other benefits?

- Good health and well-being
- Clean water and sanitation
- Affordable and clean energy
- Sustainable cities and communities
- Life below water
- Life on land

UN Sustainable Development Goals, "Climate Action" is not shown

### Who else is doing it?

- Boulder, USA, and Saanich, BC - climate plans contain robust ecosystem and agriculture strategies
- City of Burnaby, BC - [green street standards](#); [tree bylaw](#)
- Surrey, BC - [biodiversity strategy](#); [tree bylaw](#)
- [Montana](#), USA - grasslands restoration and carbon offsetting program
- [Edmonton](#), AB - building resilient urban ecosystems discussion paper

## 4. Pathways to a Carbon Neutral Kamloops

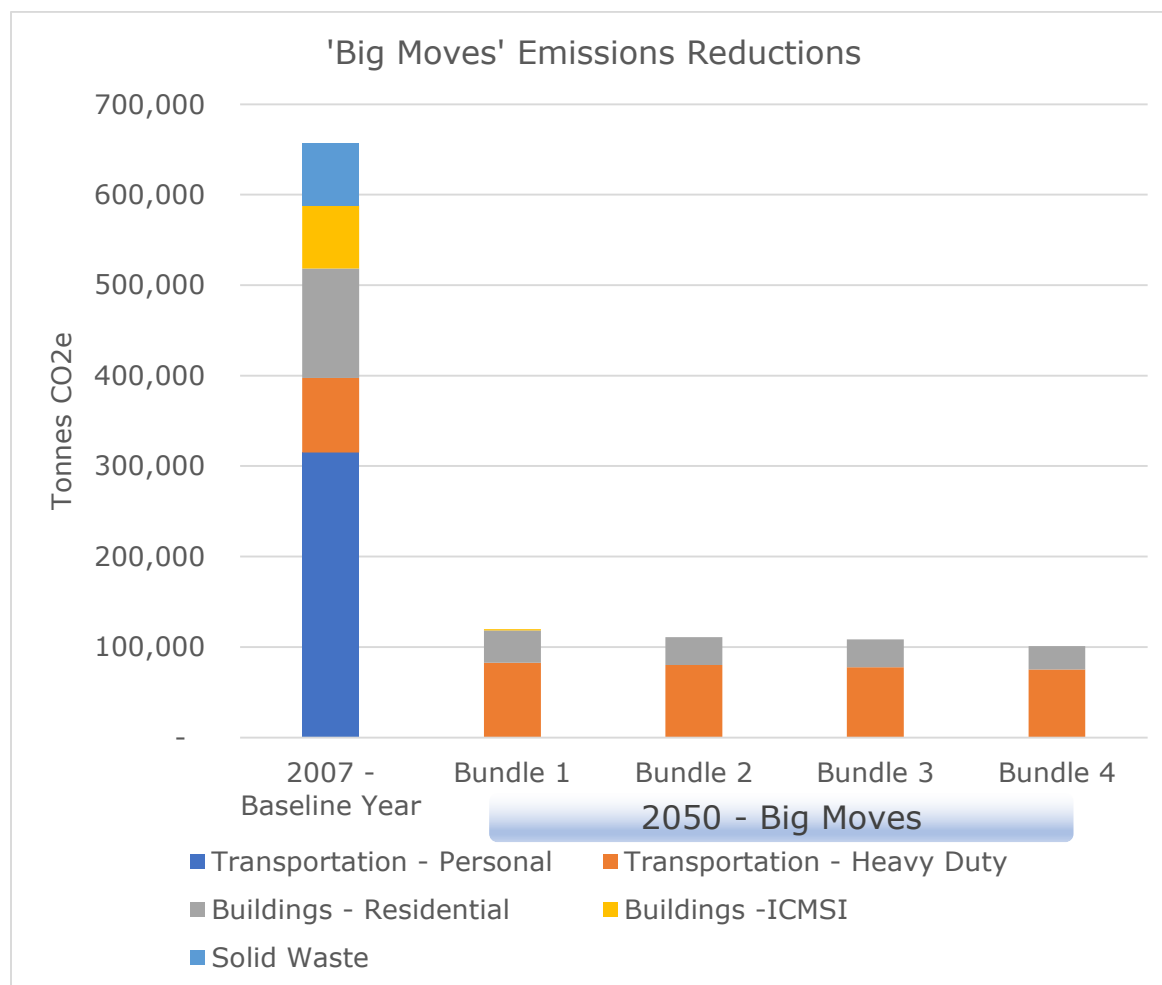
The Big Moves, together with emissions reduction actions in existing City plans, have the potential to achieve reductions of 538,000 to 556,000 tonnes CO<sub>2</sub>e by 2050. This represents a cumulative reduction over baseline (2007) of 82% to 85%, which supports Council's strategic goal on emissions reductions and is within reach of the IPCC's emissions reductions goal.

The Big Moves policy options have been grouped into four unique bundles, each with their own emissions reductions potential and implementation challenges, as summarized in Table 1.

*Table 1 - Big Moves Bundling Summary*

Bundle	Emissions Reductions	Included Policies	Considerations
<b>Bundle 1</b>	537,000 tCO <sub>2</sub> e reduction (82%) from 2007 by 2050	1A - 10-Minute City 1B - Green New Neighbourhoods 2A - Low-Emissions Superblocks Big Moves 3–8, inclusive	Least complex bundle to implement, but does not completely decarbonize ICMSI buildings
<b>Bundle 2</b>	546,000 tCO <sub>2</sub> e reduction (83%) from 2007 by 2050	1A - 10-Minute City 1B - Green New Neighbourhoods 2B - Low-Emissions Zones Big Moves 3–8, inclusive	Implementation of low-emissions zones results in decarbonization of ICMSI sector for a significant trade-off in terms of ease of implementation
<b>Bundle 3</b>	549,000 tCO <sub>2</sub> e reduction (84%) from 2007 by 2050	1A - 10-Minute City 1B - Green New Neighbourhoods 1C - Urban Containment 2A - Low-Emissions Superblocks Big Moves 3–8, inclusive	Trade-off incorporates less complex superblock, but extremely challenging urban containment, which may result in numerous challenges for the City to implement
<b>Bundle 4</b>	556,000 tCO <sub>2</sub> e reduction (85%) from 2007 by 2050	1A - 10-Minute City 1B - Green New Neighbourhoods 1C - Urban Containment 2B - Low Emissions Zones Big Moves 3–8, inclusive	Largest reduction includes all land use policies, including challenging urban containment strategy and low-emissions zones, which will also be quite challenging from an implementation perspective

Figure 3 - Big Moves Emissions Reduction Bundles



As noted in the table above, there is no single bundle of best-practice informed strategies that can allow Kamloops to achieve complete carbon neutrality by 2050. Efforts from regional, provincial, and national governments as well as industry stakeholders and allied organizations must be coordinated and promoted such that this gap in emissions can be addressed.

Specifically, the following two areas of interest will require additional inquiry and effort to allow Kamloops to comply with a carbon neutral mandate by 2050:

- Commercial Vehicles (~75,000 tCO<sub>2</sub>e) - primarily medium- and heavy-duty truck traffic originating in Kamloops (i.e. registered in Kamloops)
- Residential Buildings (~25,000 tCO<sub>2</sub>e) - remaining stock of older residential buildings that cannot be realistically retrofitted by 2050 given policy trajectories

While it is beyond the scope of this document to substantively assess how these two areas can be addressed through non-Kamloops-generated strategies and actions, the City can still advocate for provincial and national governments to develop robust policies that can progress actions and activities that can be used by the City at a future date.

## 5. Conclusion and Next Steps

This document represents an initial attempt to identify options for deep emissions reductions. Many of the Big Moves examined in the sections above will require significant levels of municipal investment in both time and effort as well as political capital. These Big Moves will also require significant levels of interjurisdictional co-operation between the City and senior levels of government in order to achieve successful implementation within a time frame consistent with the IPCC's 1.5°C report. However, these efforts will be well balanced by the significant co-benefits they will generate. Indeed, as Kamloops moves towards carbon neutrality, many aspects of the City's quality of life will noticeably change for the better. These effects may include:

- reduced congestion and travel times
- increased air quality
- healthier citizens
- improved storm and rainwater management
- reduced heat island effects
- healthier ecosystems
- increased resilience in the face of a changing climate
- cleaner water
- local business and economic development

The call to achieve collective climate action has never been stronger as the costs of inaction continue to accrue. Based on the options evaluated in this document, a path towards net zero-carbon emissions can be achieved and should be integrated in the CCAP. However, these Big Moves are presented as options for discussion and consideration in advance of further substantive climate action planning. Engagement with Council, staff, external stakeholders, and Kamloops citizens is crucial to building the political capital necessary to execute and achieve deep emissions reductions.

Pending engagement outcomes, it is recommended that these Big Moves be examined in greater detail in future phases of the CCAP project as medium- and/or longer-term actions that can support the pragmatic efforts completed to date. Potential next steps could include:

- refinement and validation of Big Moves based on Council input
- community engagement to communicate benefits and trade-offs and ascertain support for the significant societal changes required to achieve carbon neutrality
- in-depth determination of implementation time horizons and detailed, multi-criteria analysis of costs, co-benefits, and emissions reductions
- development of business cases for Big Moves as required

Ultimately, it is important to note that the options presented in this paper represent a **potential path** for Kamloops to follow should the City choose to adopt a policy that is congruent with the IPCC 1.5°C report. As all of these options are simply that—options—the City and its citizens can alternately choose to refine or adopt as necessary a more conservative path towards climate action that may not include certain Big Moves, with the understanding that this would result in more modest emissions reductions that are unlikely to achieve carbon neutrality. Regardless of the ultimate path selected, transparency around decision making and municipal ownership of this planning effort is crucial to achieving the resulting Community Climate Action Plan.